



What is claimed is:

- 1) An apparatus for addressing objects, the apparatus comprising:
 - a directional reference;
 - a point reference;
 - a position determining means;
 - an attitude determining means;
 - a computer processor; and
 - a user interface,said position determining means being arranged to determine the position of the point reference and convey position information to said computer processor;
 - said attitude determining means being arranged to determine the attitude of the directional reference and convey attitude information to said computer processor; and
 - said user interface being in electronic communication with said computer processor.
- 2) An apparatus of claim 1, said computer processor further comprising a database having stored therein information relating to objects being addressed.
- 3) An apparatus of claim 2, said stored information including a geometric descriptor.
- 4) An apparatus of claim 3, said stored information including associations with objects being addressed.
- 5) An apparatus of claim 3, said geometric descriptor being a mathematical definition of a geometric body having spatial extent which may form an intersection with an address indicator.
- 6) An apparatus of claim 5, said address indicator being defined by an address state of said apparatus.

- 7) An apparatus of claim 5, said geometric descriptor is an approximation of the space occupied by an object associated with the geometric descriptor.
- 8) An apparatus of claim 6, said address state is defined by parameters in the group including: position, attitude, range, transverse extent, and time.
- 9) An apparatus of claim 8, said address state is defined by parameters in the group including: latitude, longitude, altitude, compass heading, pitch, roll, transverse extent, range, range gate, and time.
- 10) An apparatus of claim 6, said address indicator is defined in part by the position of said point reference as determined by said position determining means and the attitude of said direction reference as determined by said attitude determining means.
- 11) An apparatus of claim 2, said database including a plurality of records where each record is arranged to correspond to a single object and is arranged to comprise a plurality of fields.
- 12) An apparatus of claim 11, said records each comprise a geometric descriptor and an association to the object.
- 13) An apparatus of claim 12, said records further comprise information elements containing multimedia data relating to the object.
- 14) An apparatus of claim 9, said user interface is a display screen operable for forming images and graphical forms.
- 15) An apparatus of claim 9, said user interface includes a speaker.
- 16) An apparatus of claim 9, said user interface includes tactile output.

17) An apparatus of claim 1, the apparatus further comprising a plurality of information elements stored in the computer in a database, each information element comprising stored information relating to an object which may be addressed by the apparatus.

18) An apparatus of claim 13, each of said information elements further comprising a geometric descriptor being a definition of a geometric body which may be associated with an object which may be addressed by the apparatus.

19) An apparatus of claim 13, said apparatus further comprising an address indicator, said address indicator being a definition of a geometric body being associated with said directional reference and point reference, whereby said address indicator may be caused to form an intersection with one or more geometric descriptors.

20) An apparatus of claim 18, said geometric body being a cone.

21) An apparatus of claim 18, said geometric body being a conic section.

22) An apparatus of claim 18, said geometric body being a conic section is arranged in accordance with a range gate definition.

23) A method of presenting information relating to an object being addressed, the method comprising the acts:

addressing an object;

determining position;

determining attitude;

searching a database; and

presenting information,

said addressing an object being further defined as causing a reference pointing direction to be aligned towards an object;

said determining position further defined as measuring the position of a point reference;

said determining attitude further defined as measuring the orientation of a directional reference;

said searching a database further defined as comparing an address indicator against a geometric descriptor of an information element; and

said presenting information further defined as reporting results of a search where correlation is found.

24) A method of claim 23, said presenting information including information relating to an object being addressed in the addressing an object step.

25) A method of claim 23, said geometric descriptor being associated with an object which is an object being addressed in the addressing an object step.

26) A method of claim 23, said address indicator being associated with said reference pointing direction and said point reference.

27) A method of claim 23, said determining position step includes principles used in global positioning systems.

28) A method of claim 23, said determining position step includes principles used in radio signal triangulation systems.

29) A method of claim 23, said attitude determining step includes principles used in accordance with triaxial magnetometer systems.

30) A method of claim 23, said attitude determining step includes principles used in accordance with laser gyroscope systems.

31) A method of claim 23, said presenting information step further including presenting information at a transducer operable for creating a physical disturbance which may be perceived by a human operator.

32) A method of claim 31, said presenting information step further including presenting information on a display screen in image and graphical form.

33) A method of claim 31, said presenting information step further including presenting information on an audio speaker.

34) A method of claim 31, said presenting information step further including presenting information on a transducer which produces a tactile output.

35) A method of claim 23, said searching a database step further comprising recalling information stored in information elements, each information element comprising stored information relating to an object which is the object being addressed.

36) A method of claim 35, said information elements further comprising a geometric descriptor which is a definition of a geometric body and which is associated with an object that is an object being addressed.

37) A method of claim 23 said address indicator being a geometric body which is associated with said directional reference pointing direction and said point reference.

38) Pointing systems comprising:
a mobile unit;
a wireless network;
a wireless application gateway;
the Internet;
an application server; and
a database,

said mobile unit being in electromagnetic communication with the wireless network, the mobile unit comprising: a computing facility; a point reference coupled to a position determining means coupled to said computing facility whereby the position of the point reference is conveyed to the computing facility, a direction reference coupled to an attitude determining means coupled to said computing facility whereby the attitude of the pointing reference is conveyed to the computing facility, the mobile unit being operable for transmitting requests with encoded position and attitude information to said wireless network,

said wireless network is coupled to a wireless application gateway operable for receiving encoded requests from the wireless network and translating encoded requests into Internet Protocol requests and routing them via the Internet to said application server,

said application server being an application specific computer processor operable for receiving requests having position and attitude information therein from mobile units and processing those requests in accordance with a preprogrammed scheme,

said database coupled to said application server via a communication link where information may be exchanged, the database having therein preprogrammed information including geometric descriptors associated with data relating to an object where said geometric descriptors are a spatial definition of the object.

39) Pointing systems of claim 38, said database containing a plurality of records, each record comprising:

a geometric descriptor; and

a plurality of multi-media data elements,

each record relating to a single object, the object having spatial extent and a well defined fixed location associated therewith,

the geometric descriptor being a specification of that spatial extent and well defined fixed location,

the multi-media data elements being information relating to the object associated with the geometric descriptor.

40) Pointing systems of claim 39, said multi-media data elements being from the group: audio information, video information, still photo, graphical, bitmap images, simple text, and animated clips.

41) Pointing systems of claim 38, said application server comprising general purpose computer programming to effect the following steps:
receiving a request from wireless application gateway;
extracting position and attitude information from said request;
performing search to determine addressed objects;
preparing a response; and
transmitting said response to said wireless application gateway.

42) Pointing systems of claim 41, said response includes a message 'no objects in database'.

43) Pointing systems of claim 41, said preparing a response includes forming a list of addressed objects as determined in search of geometric descriptors contained in said database.

44) Pointing systems of claim 41, said preparing a response includes recalling data from a database and using said data to form the response.

45) Pointing systems of claim 38, said mobile unit is comprised of elongated case having a longitudinal axis.

46) Pointing systems of claim 45, mobile unit is further comprised encoding facility.

47) Pointing systems of claim 46, mobile unit is further comprised transmission facility.

48) Pointing systems of claim 45, point reference is within the case.

49) Pointing systems of claim 45, direction reference is aligned with a longitudinal axis of said case.

50) Pointing systems of claim 45, position determining means is GPS.

51) Pointing systems of claim 45, position determining means is e911.

52) Pointing systems of claim 45, attitude determining means is a magneto resistive device.

53) Pointing systems of claim 45, attitude determining means is a dipole compass.

54) Pointing systems apparatus comprising:

- a) a direction reference;
- b) attitude determining means;
- c) computer; and
- d) display,
said direction reference being movable via influence from a user,
said attitude determining means so coupled to said movable direction reference whereby a measure of pointing direction may be made,
said computer being in communication with said attitude determining means whereby attitude information relating to said direction reference may be conveyed to said computer, and
said display being conventionally coupled to said computer.

55) Pointing systems of claim 54, said computer further comprising a selection control, said selection control comprising:

- i) a plurality of selection items; and
- ii) a selection cursor,

said selection cursor is associated with either of said plurality of selection items to form at least one selected item, and

said selection cursor being operable for switching from a first item to a second item in response to a change in pointing direction as determined by said attitude determining means.

56) Pointing systems of claim 54, said computer further comprising a selection control, said selection control comprising:

- i) a selection range; and
- ii) a selection cursor,

said selection cursor is associated with a value within the selection range, said selection cursor being operable for switching values within the selection range in response to a change in pointing direction as determined by said attitude determining means.

57) Pointing systems of claim 55, said selection control being represented as a graphic played at said display.

58) Pointing systems of claim 57, said graphic being a list of items whereby each of said plurality of selection items appears in the list as a text label.

59) Pointing systems of claim 57, said graphic being a group of icons whereby each of said plurality of selection items is represented in the group by a single icon.

60) Pointing systems of claim 59, said group of icons being a toolbar type arrangement of icons arranged in a linear fashion.

61) Pointing systems of claim 60, said switching occurs from a first icon to a second icon in response to rotational displacements about a vertical axis.

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62) Pointing systems of claim 58, said switching occurs from a first text label to a second text label upon rotational displacements about a horizontal axis.

63) Pointing systems of claim 61, said displacements are about between 3 degrees and 20 degrees.

64) Pointing systems of claim 62, said displacements are about between 3 degrees and 20 degrees.

65) Pointing systems of claim 55, where the effect on the control is applied proportionally with respect to the magnitude of the displacement.

66) Pointing systems of claim 65, where the effect is a rate of change of letters changing serially from one to the next in the order of an alphabet.

67) Pointing systems of claim 65, where the effect is applied to a volume control.

68) Pointing systems of claim 65, where the effect is a brightness control.

69) Methods for triggering computer action relating to an object being addressed comprising the steps:

- determining an address state of a mobile unit;
- forming a request including parameters of the address state;
- transmitting said request to a server computer; and
- processing said request at said server computer to trigger an action in accordance with a program running on said server computer.

70) Methods of claim 69, said determining an address state includes a step of forming an address indicator which specifies the address state.

82) Methods of claim 69, computer action is an action taken at a remote location which relates to an object being addressed.

83) Methods of claim 78, said database search step further comprises a step of searching records including a geometric descriptor and at least one information element relating to objects.

84) Methods of claim 83, said geometric descriptor and at least one information element are associated with a particular object.

85) Methods of claim 83, said database search includes a step performing a test for intersection between an address indicator and a geometric descriptor to determine objects being addressed.

86) Methods of claim 81, said action taken at the mobile unit includes a step comprising providing an alert perceptible to a user.

87) Methods of claim 86, said action includes steps relating to a gaming scheme.

88) Methods of claim 80, said action includes a step comprised of generating a report at said object being addressed.

89) Methods of claim 89, said report is a reservation for space at a dining facility.

90) Methods of claim 79, said action at server includes a step comprising forming a database of addressed objects.

91) Methods of claim 81, said action taken in a wireless network includes a step comprising effecting a telephone communication connection.

- 92) Methods of claim 83, said action taken at a remote location includes a step comprising providing an alert to authorities as to an emergency condition.
- 93) Methods of claim 83, said action taken at a remote location includes a step comprising providing an alert to authorities as to a maintenance condition.
- 94) Methods of claim 69, the steps thereof being preceded by a pointing step comprising: manipulating a mobile unit having a point and direction reference to cause the point and direction reference to form a spatial relationship with an object of interest.
- 95) Methods of claim 70, said address indicator is comprised of parameters from the group including: position, attitude, time, temperature, humidity, atmospheric pressure, velocity, acceleration, audio level and wind velocity.
- 96) Methods of claim 70, said forming an address indicator is comprised of the step measuring position with a global positioning system.
- 97) Methods of claim 70, said forming an address indicator is comprised the step measuring attitude with a magnetoresistive transducer.
- 98) Methods of claim 70, said forming an address indicator is comprised the step measuring attitude with a dipole compass.
- 99) Methods of claim 74, said transmission step is further defined as transmitting data with via a wireless network in a wireless telephone protocol.
- 100) Methods for triggering computer action relating to an object being addressed comprising the steps:
- manipulating point and direction references of a mobile unit to cause a spatial alignment with an object of interest;
 - causing a trigger event while simultaneously holding said spatial alignment;

in response to said trigger event, measuring the address state of said mobile unit;
generating a request in accordance with a program running on a mobile nit
computer processor including at least a specification of the address state including
position and attitude measurement;

transmitting said request from said mobile unit to a server computer running
application programming;

executing a database search including a step performing an intersection test in
view of said request against at least one database record including at least one geometric
descriptor to produce a result set;

taking an action in agreement with said application programming whereby said
action relates to said result set;

returning data produced in said database search and conveying said data to said
mobile unit.

101) Methods of claim 100, said manipulating a point and direction reference step is
further defined as pointing a mobile telephone handset toward an object of interest
whereby said direction reference substantially intersects the space occupied by the object
to form a spatial alignment and association between the mobile telephone and the object.

102) Methods of claim 101, said causing a trigger event is further defined as depressing
a tactile switch of a mobile telephone handset while said direction reference substantially
intersects the space occupied by the object being addressed.

103) Methods of claim 100, said measuring the address state of said mobile unit is
further comprised: measuring the position of said point reference by a global positioning
system to determine latitude, longitude and altitude values.

104) Methods of claim 100, said measuring the address state of said mobile unit is
further comprised measuring the attitude of said direction reference with a
magnetoresistive transducer to determine heading, pitch and roll values.

105) Methods of claim 100, said transmitting request to server step is further defined as transmitting a digital data stream by wireless telephone network link to a wireless application protocol gateway and further to an Internet port and finally to an Internet node connected to a server computer.

106) Methods of claim 100, said intersection test is further defined as performing a mathematical determination for coincidence between a geometric descriptor which defines a spatial extent and an address indicator geometric construct to yield a data set of elements each having been determined positive in the coincidence test.

107) Methods of claim 100, said taking an action step is further defined as calling a computer program function which executes instructions to operate on data produced in said intersection test.

108) Methods of addressing objects comprising the steps:
determining position of a point reference;
determining attitude of a direction reference;
forming an address state indicator which depends on determined position and attitude;
performing an intersection test with said address state descriptor against data stored in a database to yield a result set of data relating to objects being addressed; and
taking an action which depends upon the result set.

109) Methods of claim 108, said action is an action taken at a mobile unit device.

110) Methods of claim 108, said action is an action taken at an object being addressed.

111) Methods of claim 108, said action is an action taken elsewhere.

- 112) Methods of claim 109, said action is stimulating an output type user interface.
- 113) Methods of claim 112, said action is forming a list of related data elements.
- 114) Methods of claim 108, the steps thereof being preceded by a pointing step comprising: manipulating a mobile unit having a point and direction reference to cause the point and direction reference to form a spatial relationship with an object of interest.
- 115) Methods of claim 114, said spatial relationship is further defined as one where an address vector forms an intersection with a geometric descriptor associated with an object.
- 116) Methods of claim 108, further comprising the step of transmitting position and attitude information over a wireless communication link to an application server.
- 117) Methods of claim 108,
- 118) Methods of claim 109, where said action is initiating a telephone call.
- 119) Methods of claim 109, where said action is recording object data in a database local to the mobile unit.
- 120) Methods of claim 112 where action is providing an alarm signal.
- 121) Methods of claim 120, where said alarm signal is illumination at least one light source.
- 122) Methods of claim 120, said alarm signal is sounding an audio alert.
- 123) Methods of claim 112, said action is displaying an image.

124) Methods of claim 113, said list comprises objects being addressed.

125) Methods for triggering computer action relating to an object being addressed comprising the steps:

receiving a request including parameters of an address state of a mobile unit at a server computer; and

processing said request at said server computer to trigger an action in accordance with a program running on said server computer.

126) Methods of claim 125, said processing said request includes a database search step of searching a plurality of records each associated with a particular object.

127) Methods of claim 126, said database search step further comprises a step of searching records including a geometric descriptor and at least one information element relating to objects.

128) Methods of claim 127, said database search step further comprises a step of forming an address indicator which specifies an address state.

129) Methods of claim 128, said database search step further comprises a step of performing a test for intersection between an address indicator and a geometric descriptor to determine objects being addressed.